Notice of Allowability	Application No.	Applicant(s)	
	10/631,033	BRUHN ET AL.	
	Examiner	Art Unit	
	Monique T. Cole	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the response filed 7/10/2006*.

2. ☒ The allowed claim(s) is/are *1-27*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

M. T. Cole

Monique T. Cole
Primary Examiner
Art Unit: 1743

Allowed Claims

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

1. (Original) An apparatus for identifying a chemical moiety from a sample solution. comprising:

(a) a substrate having a channel with at least one array for capturing a chemical moiety from a sample solution; and

(b) a nanopore system downstream from the substrate for identifying the chemical moiety received from the substrate channel after the chemical moiety has been released from the array.

2. (Original) An apparatus as recited in claim 1, where the channel is a micro fluidic channel.

3. (Original) An apparatus as recited in claim 1, wherein the array comprises a probe.

4. (Original) An apparatus as recited in claim 1, wherein the probe comprises a nucleic acid molecule.

5. (Original) An apparatus as recited in claim 1, wherein the probe comprises a protein molecule.

6. (Original) An apparatus as recited in claim 1, wherein the probe comprises a carbohydrate.

7. (Original) An apparatus as recited in claim 1, wherein the probe comprises a polysaccharide.

8. (Original) An apparatus as recited in claim 1, wherein the substrate comprises a material selected from the group consisting of silicon, plastic, rubber, glass, metal, and combinations thereof.

9. (Original) An apparatus as recited in claim 2, wherein the smallest dimension of micro fluidic channel is 100 microns or less.

10. (Original) A method for separating and identifying a chemical moiety, comprising:

(a) contacting a solution comprising a target molecule to a probe positioned in a channel of a substrate;

(b) capturing the target molecule from the sample by contacting the target molecule to the probe;

(c) releasing the target molecule from the probe in a defined order; and

(d) identifying the target molecule by a nanopore system.

11. (Original) A method as recited in claim 10, wherein the order of release of the target molecule is the same as the order of binding of the target molecule to the probe.

12. (Original) A method as recited in claim 10, wherein the order of elution of the target molecule is opposite of the order of binding of the target molecule to the probe.

13. (Original) An apparatus as recited in claim 1, wherein the target comprises a nucleic acid molecule.

14. (Original) An apparatus as recited in claim 1, wherein the target comprises a protein molecule.

15. (Original) An apparatus as recited in claim 1, wherein the probe comprises a carbohydrate.

16. (Original) An apparatus as recited in claim 1, wherein the target comprises a polysaccharide.

17. (Original) An apparatus as recited in claim 1, wherein the channel comprises a small enough size to allow the target to elute off of the probe without altering the linear binding order.

18. (Original) An apparatus of claim 1, wherein the array comprises more than 10 features.

19. (Original) An apparatus of claim 1, wherein the array comprises more than 100 features.

20. (Currently Amended) An apparatus of claim [[10]] 1, wherein the substrate may be flexible or rigid.

21. (Original) An apparatus of claim 1, which further comprises valves in the channel that permit different fluids to be directed into the channel.

22. (Original) An apparatus of claim 1, which further comprises a temperature control device to provide a temperature controlled environment.

23. (Currently Amended) An apparatus of claim [[10]] 1, which further comprises means to move the fluids through the array.

24. (Original) A method as recited in claim 10, wherein the step of releasing the target molecules involves heating portions of the array.

25. (Original) A method as recited in claim 10, wherein the target molecules are not labeled prior to introduction to the array.

26. (Original) A method as recited in claim 10, wherein the solution contacting the probes may comprise target molecules from more than one sample and the samples are differentially labeled.

27. (New) An apparatus for identifying a chemical moiety from a sample solution. comprising:

(a) a substrate having a channel with at least one array for capturing a chemical moiety from a sample solution; and

(b) a nanopore system downstream from the substrate for identifying the chemical moiety received from the substrate channel after the chemical moiety has been released from the array, the nanopore system including:

i) an ion conducting channel; and

ii) means for recording changes in conductance of ions across the channel.